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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/828,819	04/10/2001	Chung Nam Whang	2632-0142P	7521

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EXAMINER

UHLIR, NIKOLAS J

ART UNIT	PAPER NUMBER
1773	8

DATE MAILED: 06/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Offic Action Summary</b>	Applicati n N .	Applicant(s)
	09/828,819	WHANG ET AL.
	Examiner Nikolas J. Uhlir	Art Unit 1773

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Peri d for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on 09 May 2003.
- 2a) This action is FINAL.      2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 6-20 is/are withdrawn from consideration.
- 5) Claim(s) none is/are allowed.
- 6) Claim(s) 1-5 is/are rejected.
- 7) Claim(s) 4 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 10 April 2001 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved by the Examiner.  
 If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some \* c) None of:
1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
 a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                             | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

**DETAILED ACTION**

***Election/Restrictions***

1. Applicant's election with traverse of the restriction between the product claims 1-5 and the method claims 6-20 in Paper No. 7 is acknowledged. The traversal is on the ground(s) that the restriction requirement is improper. In particular, the applicant asserts that a complete search of the subject matter in the claims would include a review of both class 428 and 427, and thus does not place a serious burden on the examiner. This argument is not persuasive. Claims 1-5 are directed towards a product, whereas claims 6-20 are directed towards a method for making that product. A complete search of the product claims would not require a search in class 427, which is a class strictly devoted to methods, not products. Furthermore, it has been established in the restriction requirement that the inventions of claims 1-5 and 6-20 are distinct, as the method claimed by claims 6-20 can be utilized to form another and materially different product. Thus, a serious burden is placed on the examiner, as not only would the examiner have to consider two distinct inventions, the examiner would have to perform a much broader search.

The requirement is still deemed proper and is therefore made FINAL.

***Priority***

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

***Drawings***

Art Unit: 1773

3. The drawings are objected to under 37 CFR 1.83(a) because they fail to show element number 55 in figure 2 as described on pages 2 and 3 of the specification. Further, elements 211a and 211b are not shown by figure 3a, as described on page 6 of the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

#### ***Specification***

4. The disclosure is objected to because of the following informalities: The description of figure 5b on page 7 of the specification is incorrect. Specifically, line 8 of page 7 states, "the second area 211a." This should be "the second area 211b."

Appropriate correction is required.

#### ***Claim Objections***

5. Claim 4 is objected to because of the following informalities: The phrase "earth rare" should be "rare earth." Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 4 and 5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In the instant case, claims 4 and 5 utilize the

Art Unit: 1773

terminology "which is at least selected one of." This is both improper English and improper Markush group terminology, and renders the metes and bounds of the claim unclear. Replacing this phrase with proper Markush group terminology, i.e. "which is selected from the group consisting of" is sufficient to overcome this rejection. Correction is required.

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Chappert et al. ("Planar Patterned Magnetic Media Obtained by Ion Irradiation" Science, Vol. 280, June 19, 1998, pp. 1919-1922).

10. For the purpose of this examination, the examiner has utilized a copy of the Chappert et al. article that was obtained from [www.sciencemag.org](http://www.sciencemag.org). This copy is a word for word transcription of the published document.

11. The limitations of claim 1 require a magnetic film comprising an easy axis in a predetermined area treated by an ion beam.

12. The limitation "treated by an ion beam" is a product-by-process limitation and is does not appear to be further limiting in so far as the structure of the product is concerned. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability

of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). See MPEP § 2113. In the instant case, a magnetic film with an easy axis in a predetermined direction could be formed by a different method, such as through the heat treatment of a deposited magnetic film.

13. Irrespective of whether portions of claim 1 are product by process limitations, Chappert et al. (hereafter Chappert) teaches a method for magnetically patterning a continuous magnetic film that utilizes ion beam irradiation to form arrays of adjacent 1 $\mu$ m lines with differing magnetic properties (page 2 of 10, paragraph 2). This beam induced magnetic patterning allows the formation of adjoining regions with very different magnetic properties, such as perpendicular versus in-plane magnetization (page 6 of 10, paragraph 2). This statement clearly anticipates the formation of a magnetic film with an easy axis in a predetermined direction, as a perpendicular region will have an easy axis oriented normal to the substrate surface, whereas an in-plane region will have an easy axis oriented in the plane of the substrate.

14. The limitations of claim 2 require a magnetic film having a first area having a first easy axis with a direction and a second area having a second easy axis with a second direction. These limitations are clearly anticipated as set forth above for claim 1, as Chappert clearly indicates the use of the ion beam method in the formation of adjoining regions with very different magnetic properties, such as perpendicular (1st region with

1st easy axis having a 1st direction) versus in-plane magnetization (2nd region with 2nd easy axis with a 2nd direction).

15. The limitations of claim 3 require the angle difference between the 1st and 2nd easy axis of claim 2 to be in the range of 60-90<sup>0</sup>. This limitation is clearly anticipated by Chappert as set forth above. The formation of a patterned media having perpendicular and horizontal adjoining portions will have a 1st perpendicular easy axis oriented vertically from the substrate (90<sup>0</sup>), and a 2nd horizontal easy axis oriented in-plane (0<sup>0</sup>) with the substrate, thus the angle difference between the two axes will be 90<sup>0</sup> which is encompassed within the range specified by claim 3.

16. The limitations of claims 4 and 5 require the magnetic film to include a rare earth metal selected from (Pt, Pd, Au, and Tb) (claim 4) and a transition metal selected from Co, Ni, and Fe (claim 5). Chappert teaches that suitable materials for forming the magnetic film that is to be patterned include Pt-Co-Pt sandwiches and (Pt-Co)<sub>n</sub>-Pt multilayers (page 2 of 10, paragraph 3). Thus, the limitations of claims 4 and 5 are clearly anticipated.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nikolas J. Uhlir whose telephone number is 703-305-0179. The examiner can normally be reached on Mon-Fri 7:30 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on 703-308-2367. The fax phone numbers

Art Unit: 1773

for the organization where this application or proceeding is assigned are 703-872-9310  
for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or  
proceeding should be directed to the receptionist whose telephone number is 703-305-  
0389.

MM  
nju  
May 30, 2003

*Paul Thibodeau*  
Paul Thibodeau  
Supervisory Patent Examiner  
Technology Center 1700